

# MONTANA TROUT STREAMS

23



Will we have  
tomorrow  
what we have  
today?

MONTANA FISH & GAME DEPARTMENT PUBLICATION—1962



Montana is rapidly losing its trout stream fishing.

Parts of naturally winding stream channels have been gutted and straightened to facilitate road and railroad construction, certain agricultural practices, and urban development. More are being re-shaped today.

This man-handling of our cold-water streams is of immediate concern to those who value trout fishing or the dollars that anglers pass around, because re-shaped streams raise far fewer trout.

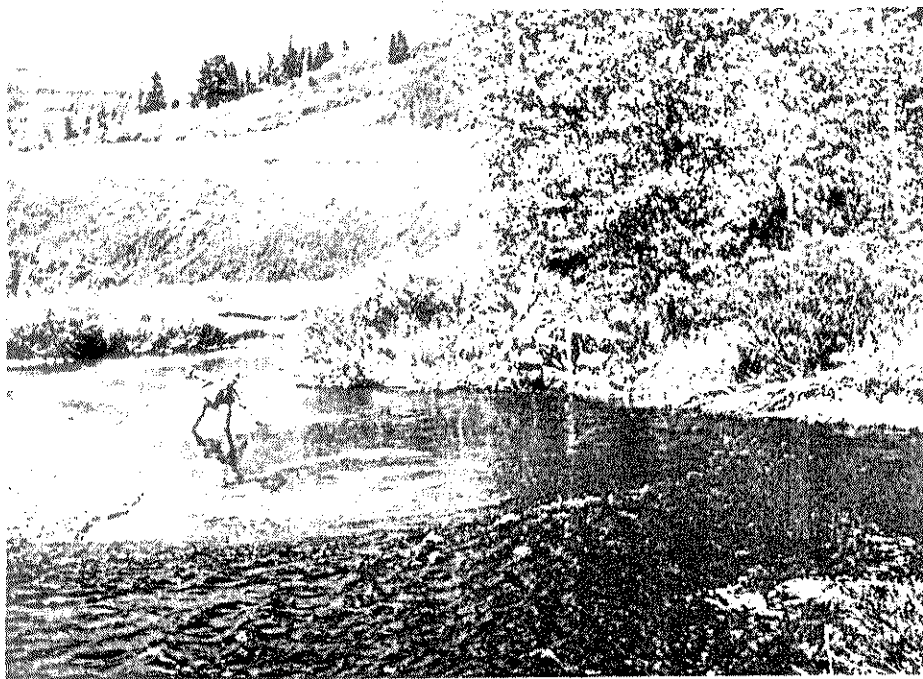
This sad fact shouldn't surprise anyone who considers a trout's basic needs—water, food, and shelter.

## THE NATURAL SHAPE OF THINGS

Clean water, flowing year-long, is important to trout. So is the shape of the bed and banks through which the water flows.

The best trout streams have many meanders or curves with a complex of gravel-bottomed riffles and deep, shaded pools. Below the willows and cottonwoods growing on the stream bank are undercuts, extending several feet under the bank.

Each feature plays an important part in the life of trout. The riffles produce the insects and small fish that trout use for food. Riffles protect trout eggs until they hatch. Young trout spend most of their early lives in riffles and the larger trout use these parts of the streams as feeding areas.



A Natural Stream—Pools, Riffles, Undercut Banks—And Large Trout

Pools and undercut banks serve as shelter—resting and hiding places—for larger trout. Overhanging brush also affords cover but, more important, the root system holds the bank soil together and retards erosion. This preserves the pools and undercuts that provide trout shelter.

## THE SHAPE THAT MAN LEFT

A stream that provides these needs—water, food, and shelter—is a fishing stream. Remove the features that supply one or more of these requirements and the stream is no longer a good trout producer.



A Man-handled Stream—No Pools, Undercut Banks—Few Trout

This essentially is what has happened to a number of Montana's trout streams. Man-made channel changes have removed the deep pools and undercuts—the shelter areas—resulting in a marked decrease in larger trout.

The rechanneling of a part of Flint Creek, near Philipsburg, for highway construction in 1957, is an example. In a 300-foot study section, the number of catchable-sized trout (6 inches or larger) dropped from 69 the year before construction to 6 the following year. Boulders have since been added to the stream to try to replace the shelter areas that were lost. Still, in 1962, 5 years after rechanneling, there were only one-third as many large trout in the study section.

The year following the Flint Creek rechanneling, 17 miles of Rock Creek near Red Lodge were altered for flood control. Snags were removed from the channel. Stream bed gravel was bulldozed into dikes, which replaced the natural banks.

A few months following this alteration, on a study section of Rock Creek, the trout population dropped 75% from the count of one year before.

#### Our Shape Is Slipping . . .



The man-made channel changes on Flint Creek and Rock Creek are not isolated examples. Similar changes have been noted on parts of almost all Montana streams.

In fact, the practice of reshaping stream channels has increased at such an alarming rate that in 1962 a study was made of 13 streams throughout the state to measure the amount of channel alterations.

The study showed that one-third of the total length of these streams (250 of 768 miles) had been altered from their natural condition. Four of the streams had more than one-half their length reshaped by man.

As could be expected, far fewer catchable-sized trout were found in the altered stream channels than in the unaltered parts of the same streams. Only 2 trout

were censused in the disturbed sections for every 11 in the undisturbed sections. The difference in whitefish was even more striking—1 to 10.

#### . . . And Slipping



The greatest loss of fishing water in the streams studied resulted from man's apparent unwillingness to allow the streams to meander through their natural courses. Their total length was shortened by 68 miles when 137 miles of natural stream channel was rerouted into 69 miles of inferior, man-made channel.

In all, channel relocations accounted for 55% of the alterations found on the 13 streams. The remaining alterations consisted of riprapping or dumping car bodies, trash, boulders, or anchored material on the stream bank (26%), diking (16%), and channel clearance (3%).

The source of the changes was also determined. More than one-half of the alterations were attributable to road and railroad construction activities with the total almost equally divided between the two.

The bulk of the railroad work was done prior to 1920 while most state, county, and federal road construction projects were of a more recent vintage.

Agricultural activities accounted for over one-third of the channel alterations. The greatest number of individual alterations were enumerated in this category.

The remaining channel changes were attributable to urban and industrial development projects.

#### Time To Shape Up



What do these statistics mean? Simply that we've ruined a lot of trout stream during the short time that we've lived in this place called Montana. Some of

the changes were necessary. Most of the jobs could have been done without damaging the streams. In all cases, the loss was final for there is no way known to remake a trout stream once its natural channel has been destroyed.

We still have some decent trout streams in the state but the supply is dwindling. Plans are being made now that will destroy part of what's left.

This leaves us with a choice. We can sacrifice our remaining streams by lack of concern—if we decide that's what is best for ourselves and those who will come later. Or we can be big-hearted and pass some good fishing water along to the next generation.

To help decide, there are many things to consider. One is that almost half of the eligible residents buy a fishing license. Two-thirds of them fish for trout in streams. Anglers also drop a sizable chunk of money into the state's economy. In 1960 alone, they spent over \$36,000,000 for the things they needed to match wits with fish. Potential expenditures promise to be much greater.

But most important, fishing is fun. It was fun yesterday and it will be fun tomorrow. And the growing demand for outdoor recreation is a nation-wide cause for immediate concern.

Consider too, that Montana has no laws to control the activities which are destroying the very features that make streams good trout producers. The choice that you make—your action on legislation to protect trout streams—will decide the excellence of our future fishing.

# INFORMATION IN THE FOLLOWING TABLES WAS GATHERED DURING A 1962 SURVEY OF 13 MONTANA STREAMS

STREAM MILES LOST AND MILES RELOCATED IN 13 MEASURED STREAMS			
	Miles of Natural meandering stream channel lost	Miles of Relocated stream channel replacing natural meander- ing stream channel	Reduction in stream length (miles)
Little Big Horn River	52.9	16.5	36.4
St. Regis River	6.3	5.4	0.9
Mineville Creek	0.9	0.7	0.2
Sheep Creek	3.6	2.0	1.6
Otter Creek	6.7	2.9	3.8
Belt Creek	8.6	7.2	1.4
Beaver Creek	3.5	2.0	1.5
West Gallatin River	4.4	4.1	0.3
Rocky Creek	9.3	5.3	4.0
Big Hole River	17.3	4.4	12.9
Boulder River	2.1	1.5	0.6
Prickley Pear Creek	19.2	16.0	3.2
Ashley Creek	2.8	1.4	1.4
Total	137.6	69.4	68.2

THE LENGTH OF STREAM CHANNEL ALTERED AND THE NUMBER OF ALTERATIONS BY TYPE IN 13 MONTANA STREAMS OR RIVERS

River or Stream	Channel Relocation		Ripraping		Channel Clearance		Diking		Total			
	Miles Altered	No. of Alter- ations	Miles Altered	No. of Alter- ations	Miles Altered	No. of Alter- ations	Miles Altered	No. of Alter- ations	No. of Stream Miles Altered	No. of Alter- ations		
Little Bighorn R.	16.5(36.4)*	68	6.2	95	1.3	13	3.4	15	120.0	63.8	191	53
St. Regis R.	5.4(0.9)	23	17.9	88	0.0	0	1.1	10	37.1	25.3	121	68
Ninemile Cr.	0.7(0.2)	6	1.7	53	0.0	0	2.4	22	23.9	5.0	81	21
Sheep Cr.	2.0(1.6)	15	0.2	9	0.1	1	0.0	0	12.4	3.9	25	31
Otter Cr.	2.9(3.8)	23	0.7	18	0.5	9	0.1	3	34.5	8.0	53	23
Belt Cr.	7.2(1.4)	36	3.4	55	0.2	2	8.8	66	81.0	21.0	159	26
Beaver Cr.	2.0(1.5)	6	1.2	30	0.2	7	0.5	23	49.5	5.4	66	11
West Gallatin R.	4.1(0.3)	20	9.5	143	0.7	13	5.6	88	85.9	20.2	264	23
Rocky Cr.	5.3(4.0)	31	1.3	62	0.1	3	0.8	12	18.4	11.5	108	63
Big Hole R.	4.4(12.9)	56	11.0	107	0.9	13	17.0	219	147.6	46.2	395	31
Boulder R.	1.5(0.6)	14	7.9	246	1.2	21	1.4	27	86.3	12.6	308	14
Prickley Pear Cr.	16.0(3.2)	21	1.0	72	0.8	31	0.1	7	41.0	21.1	131	51
Ashley Cr.	1.4(1.4)	8	1.9	73	2.2	3	0.1	1	30.2	7.0	85	23
Total	69.4(68.2)	327	63.9	1051	8.2	116	41.3	493	767.8	251.0	1987	33

\*Number in parenthesis refers to miles of stream channel lost as a result of the channel relocations.

THE LENGTH OF STREAM CHANNEL ALTERED, NUMBER OF ALTERATIONS, AND THE REASONS FOR ALTERATIONS IN 13 MONTANA STREAMS OR RIVERS

River or Stream	Railroad Construction		Road Construction		Urban and Industrial Development		Agricultural Activities		Total			
	Miles 1/ Altered	No. of altera- tions	Miles 1/ Altered	No. of altera- tions	Miles 1/ Altered	No. of altera- tions	Miles 1/ Altered	No. of altera- tions	No. of stream miles	Miles 1/ Altered	No. of Alter- ations	Perc Alter
Little Big Horn R.	39.8	48	2.9	22	2.0	7	19.2	114	120.0	63.9	191	53
St. Regis R.	13.0	54	10.7	60	1.6	6	0.1	1	37.1	25.4	121	68
Ninemile Cr.	0.1	5	0.6	24	1.9	4	2.4	48	23.9	5.0	81	21
Sheep Cr.	0.0	0	3.8	25	0.0	0	0.0	0	12.4	3.8	25	31
Otter Cr.	0.0	0	4.6	41	0.1	1	3.3	11	34.5	8.0	53	23
Belt Cr.	1.2	10	9.3	74	4.4	28	6.2	47	81.0	21.1	159	26
Beaver Cr.	1.5	3	2.7	25	0.2	10	1.0	28	49.5	5.4	66	11
West Gallatin R.	0.8	6	11.8	98	0.7	26	6.9	134	85.9	20.2	264	23
Rocky Cr.	3.6	7	1.6	22	1.0	26	5.4	53	18.4	11.6	108	63
Big Hole R.	3.8	21	6.1	50	1.3	12	34.9	312	147.6	46.1	395	31
Boulder R.	2.5	26	3.1	49	1.9	18	4.9	215	86.3	12.4	308	14
Prickley Pear Cr.	3.6	26	0.4	7	14.6	24	2.6	74	41.0	21.2	131	51
Ashley Cr.	0.8	9	0.7	35	1.3	3	4.1	38	30.2	6.9	85	23
Total	70.7	215	58.3	532	31.0	165	91.0	1075	767.8	251.0	1987	33

1/ Includes miles of stream channel lost as a result of the channel relocations.



THE NUMBER OF FISH, THE NUMBER OF FISH 6 INCHES OR LARGER, AND THE WEIGHT  
OF FISH CENSUSED IN EQUAL AREAS OF ALTERED AND NATURAL STREAM CHANNELS

River or Stream	Channel Type	Number of		Number of fish 6 inches or greater		Weight of	
		Trout	Whitefish	Trout	Whitefish	Trout	Whitefish
Little Bighorn R.	Natural	76	5	26	5	13.7	3.0
	Altered	37	1	1	1	1.6	0.0
St. Regis R.	Natural	22	35	9	35	4.1	19.8
	Altered	6	5	5	5	0.8	1.5
Kinemile Creek	Natural	65	0	17	0	4.3	0.0
	Altered	13	0	0	0	0.6	0.0
Sheep Creek	Natural	35	40	9	33	2.4	4.7
	Altered	1	0	0	0	0.1	0.0
Otter Creek	Natural	16	0	14	0	8.5	0.0
	Altered	1	0	1	0	0.4	0.0
Belt Creek	Natural	2	3	1	3	0.2	2.4
	Altered	0	0	0	0	0.0	0.0
Beaver Creek	Natural	88	0	17	0	5.6	0.0
	Altered	3	0	0	0	0.1	0.0
West Gallatin R.	Natural	6	16	6	15	4.4	14.6
	Altered	1	11	1	11	0.1	7.2
Rocky Creek	Natural	63	13	62	13	29.3	12.9
	Altered	55	0	24	0	5.0	0.0
Big Hole River	Natural	17	68	14	63	9.0	26.3
	Altered	1	0	0	0	0.1	0.0
Boulder River	Natural	41	1	22	1	4.2	1.3
	Altered	0	0	0	0	0.0	0.0
Prickley Pear Cr.	Natural	19	0	11	0	5.5	0.0
	Altered	13	0	5	0	1.7	0.0
Ashley Creek	Natural	0	0	0	0	0.0	0.0
	Altered	0	0	0	0	0.0	0.0
Total	Natural	450	181	208	168	91.2	85.0
	Altered	131	17	37	17	10.5	8.7